

The Planters' Chronicle.

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THE U. P. A. S. I.

(INCORPORATED.)

Contents.

We would call attention to the heading of this page, where for the future the Secretary's registered telegraphic address will be found. Subscribers, when telegraphing to the Secretary, are requested to employ it.

A short account of the U. P. A. S. I. Exhibition is published, and our thanks are due to all those who helped to make it attractive and also to those who have allowed us to retain samples, to form the nucleus of a permanent record.

Mr. Bainbridge Fletcher, Government Entomologist, has written an interesting note on *Antestia cruciata*, or Coffee Berry Bug. Through his kindness we are able to reproduce an illustration of the Bug, which will tend to easy identification.

A correspondent sends us an article on the Metric System, which displays considerable ingenuity. There is no doubt that the time must come when England and India must fall into line with almost every other country and introduce a decimal coinage metric system, if they intend to retain the place of pride in the world of commerce. We would welcome more articles of this description from our subscribers.

At our late Exhibition, samples of Rubber cured by means of Sodium Bisulphite were exhibited, and while these samples are still fresh in the memory of those who visited the Exhibition, we reproduce an article on its use in the preparation of Plantation Rubber.

Mr. Danvers asks for more enlightenment on the subject of Green Bug, and we hope that some Shevaroy Planter will give him the information he asks for and to the planting public at large.

In accordance with instructions from the Executive Committee of the Labour Commission, the Secretary has despatched two copies of the Labour Report to every member of every District Association and wishes it to be known that, on application to him, spare copies will be furnished to any applicant.

The publication of Book of Proceedings for 1913 is being pushed on as rapidly as possible, and the Secretary hopes to reduce the cost of it, and hopes that every member will take a copy.

The U. P. A. S. I. Exhibition.

As usual an Exhibition of products, fertilisers, machinery, &c., was held in the Offices of the Association during the Annual Meeting, and an interesting collection was got together.

RUBBER.

A number of estates sent in samples of Rubber and as last year the almost white crepe and the sponge-like masses of worm rubber from the Cochin Rubber Co., were very pretty. Eldorado, Pullangode and Rani Travancore also sent samples of different grades of rubber. Among the small samples the diamond crepe from Kerala was undoubtedly the best and caused much interest and admiration.

The Travancore Rubber Co., exhibited samples of all grades on a larger scale in a neat cabinet while from Pudukad came two full cases of Crepe Nos. 1 and 4 showing the rubber as actually shipped home. This is the kind of exhibit that is wanted and is of much more interest to planters than small samples of fancy grades.

TEA.

A number of samples were sent in but nearly all came from one district, Peermade. One Nilgiri sample was shown from Frith Hall and Mr. Nicolls sent a complete set of grades in neat exhibition boxes.

COFFEE.

The only coffee exhibited was an interesting series of Hybrid Coffees from Mr. J. G. Hamilton. In former years Mr. Hamilton has exhibited series of leaves showing the progress made during hybridisation and this year his samples of coffee from the different generations was of great interest. All Coffee planters will join in thanking Mr. Hamilton for his kindness in showing each year by means of samples what is being done in this important line of work, and we hope that next year he will be able to show us market samples of the various hybrid coffees growing on his estate.

FERTILISERS, ESTATE TOOLS, MACHINERY, &c.

Messrs. Parry & Co., Messrs. Peirce Leslie & Co., and the Polish Syndicate, exhibited collections of Fertilisers which were of great interest and educational value.

Messrs. Peirce Leslie, and Messrs. Harrisons & Crosfield exhibited estate tools, tapping knives, latex cups, etc., while Messrs. Siemen & Co., and Messrs. Marshall, Sons & Co., were good enough to take the trouble to erect a number of machines, including a dynamo, coffee huller, tea packer, etc. This is exactly the kind of exhibit which is wanted during these meetings and we trust that these enterprising Firms will reap a reward in comparison with the trouble they took.

MISCELLANEOUS.

A number of miscellaneous exhibits were displayed. Sisal Fibre from Chundrapore, Pepper from the same estate, Tea chests, sprayers, etc. Messrs. Forster & Co., showed a block of English Resin, garnished (as the cookery books say) with bars of Blue Soap, these being used as insecticides for Green Bug and other pests. This Firm and also Messrs. R. Macleod of Madras showed compact medicine chests containing all that is necessary for treating coolies on the estates.

To all exhibitors we extend our hearty thanks for helping to make our Exhibition a success, and for taking so much trouble to show us interesting things and for explaining them to us during the days the show was open.

Demonstration of the use of Dynamite in Agriculture.

On 29th and 30th August a trial was made at the Lal Bagh Gardens, with the use of explosives for loosening the soil. Messrs. Nobel & Co. supplied the explosive but were unfortunately unable to send an agent to conduct the experiments which were carried out by the Scientific Assistant for Mysore.

Holes were made 3 feet deep 12 x 12 and 6 x 6 and a cartridge exploded in each. Not much effect was apparent but no doubt the sub-soil and lower layers were cracked. In order to find out what benefit has been produced Ceara Rubber is to be planted over the area treated and its rapidity of growth compared with plants on neighbouring untreated areas. This part of the experiment is being kindly carried out by Mr. Krumbiegel, the Mysore *Economic Botanist*.

Two attempts were made to blow up stumps but with little success. The explosive was not strong enough to lift a mango stump about 3 feet in diameter with two big side roots but it demolished the tap root and left it in a state in which a Jack would easily take it out.

At the same time that this demonstration was going on, the use of a Trewheila Jack was shown and a stump removed with it, and a demonstration of fumigating plants in the Lal Bagh Fumigatorium to kill Scale Insects on them was also given by Mr. Krumbiegel.

Visit to the Indian Institute of Science.

Owing to the kindness of the Director a visit to the Indian Institute of Science is becoming an regular event during the Annual Meeting of the U. P. A. and on Friday afternoon 29th August a number of Delegates and ladies accepted the invitation given them to inspect the laboratories of the Institute.

As in past years a most enjoyable and instructive afternoon was spent and the officers of the Institute personally conducted parties round the different Departments and explained their mysteries.

The Director and Dr. Watson again showed us liquid air and performed experiments to exhibit the uses and properties of this product of a modern age of applied Chemistry. A modern electrical method of extracting pure Copper from solutions was shown us as also the spectra of the rare gases of the atmosphere and many other delightful things.

In the Department of Applied Chemistry the machines were at work for our benefit and a delightful afternoon closed in the library with tea and refreshments. To the ladies who so kindly received us and to Dr. Travers and all the Officers of the Institute our cordial thanks are due for an extremely pleasant and instructive afternoon.

Note on *Antestia cruciata*.

BY THE GOVERNMENT ENTOMOLOGIST.

Antestia cruciata, which was described as long ago as 1775 from Southern India, whence it had been sent to Europe by Dr. Koenig, has achieved a certain notoriety of late years as an occasional serious pest of Coffee, which it damages by sucking the berries. Specimens were sent from Craigmere Estate in March of this year by the Hon'ble Mr. E. F. Barber and I understand that this insect is well-known as a pest of Coffee in the Nilgiris. It is widely distributed in Southern India and probably has a wide range of food-plants, as I received it during the same month from Salem whence it was sent as damaging Jasmine plants in a garden. We also have it from Hillgrove, 5th September 1908, on Coffee; Coimbatore, in January, February, and August; and Madras city in February 1907. As is the case with so many of our common Indian bugs, the early stages do not seem to have been described, nor is the exact life history known in any detail, but it is probable that eggs are laid on leaves and twigs of the food-plant and that the young bugs spend their whole life, gregariously at first, on the plant. The dates given above appear to indicate two broods in the year, the adults being found in January—March, and August—September.

As regards remedial measures, collection by hand is probably the best method, the bugs being caught in a small hand-net made of a bag of mosquito-net or muslin fastened around the mouth to a ring of bamboo or light wood secured to a short handle, or being simply shaken off the bushes into pans containing water with a thin film of oil on top.

As in the case of most of these pests, prevention is better than cure, and a vigorous attack on all isolated individuals and small broods immediately they are noticed will usually save much damage by the larger broods which may otherwise occur later on.

To facilitate identification of the bug a figure of the adult insect is given here. The smaller figure shows the actual life-size of the insect; the larger



figure is magnified to show greater detail. The colouration, roughly speaking, shows orange-yellow or reddish markings on a black ground-colour.

The scientific name "*cruciata*" refers appropriately enough to the cross-shaped mark on the scutellum (the shield-shaped portion in the middle of the figure), whilst those who prefer vulgar names may call this insect the "Coffee-berry Bug."

It has been stated that *Antestia cruciata* is identical with the Coffee-berry Bug of East Africa but this is not the case, although *A. cruciata* is very closely allied to the African Bug. This latter is *Antestia lineaticollis* St. (= *variegata*, Tb.) and a long account of its life-history, damage to Coffee, etc., by Dr. Schouteden will be found in the "Revue Zoologique Africaine," Vol. II, pages 20-26.

T. BAINBRIDGE FLETCHER, Govt. Entomologist.

The Metric System.

The Metric System is the simplest system in the world for the keeping of accounts, for measuring of land, dispensing of medicines, etc., and it is obvious that the British Empire, India included, will have soon to adopt it or lose part of their trade, as foreign nations refuse to understand their present measures.

Our old system is kept on because all the old records are recorded in it, and as people get on in years they say the system may be bad but change it in our children's time and not in ours. The son, however, also gets old and so it goes on.

It was proposed in Parliament a few years ago, but Mr. Lloyd George defeated the measure by saying it was not working properly in France. The fundamental measure in France is the ten-millionth part of a meridian line drawn from the pole to the equator and is 39'37079 English inches. The yard measure, the arbitrary fundamental standard of England, is embedded in the walls of the Houses of Parliament, the history of it is traced back to the Hebrews and Egyptians and then lost in antiquity.

It is my purpose to show how we can devise a British metric system of our own, simple, and obviating the loss of our old records.

To begin along the line of the least resistance, it appears the first thing to be tackled is our coinage, the basis of everything should be ten. The sovereign is the standard and is the only coin worth its face value, it is exchanged for 960 farthings, the farthings being tokens, it is proposed in Parliament that it should contain one thousand farthings, and to have a new coin worth 10 farthings and 100 farthings to be the exchange for a florin.

Farthings.			Pice.		
10	New Coin.		10	New Coin.	
100	10 Florin.		100	10 New Coin.	
1,000	100 10 Sovereign.		1,000	100 10 Sovereign.	

To equal this in India we have the sovereign containing 960 pice of 3 pies each! so taking the pice as the basis and declaring 1,000 pice to be the exchange for a sovereign or Rs. 15 we should at once have a similar coinage.

The misfortune of this system is however that it ignores the pie, the pie has a buying value and is much used by the cooly, also the rupee would go, and new coins of value 2 annas 6 pies and Re.1-9 annas would have to be named and issued.

We have however one standard with which we could assimilate at once in the coinage of America, 5 dollars of which coinage are worth Rs.15-10 as. and the present value of 1,000 pice is the same, namely Rs.15-10 annas. Also if Government was to declare Rs.15-10-0 the exchange for one sovereign it would cut the Gordian knot at once, give us a decimal coinage in

pie, and benefit the producer of India ten annas in each sovereign, as he would obtain that amount more for each sovereign of produce.

The alternate system is to use the pie and 5 Rupees. At present there are 900 pies in 5 Rupees, Government would have to demand 1,000 and issue a small gold piece value Rupees 5. This system would be far better than pie and sovereigns, as the cooly thinks in pie and it would be hard on him to abolish it.

The demanding of 1,000 pies for 5 Rupees or 200 for 1 Rupee would not affect anyone, the holders of 5 Rupees would find the exchange value still one-third of a sovereign, the 5 Rupees being gold, the holders of 1 Rupee would apparently gain 8 pies but prices would soon adjust that matter; Government also would neither gain nor lose, the pie being only a token as also the rupee.

Pie.			
10	Anna.		
100	10	Eight anna piece.	
1,000	100	10	5 Rs. gold.

+ Pisa.					
10	2½	Anna.			
40	10	4	Powly or Quarter.		
100	25	10	2½	Eight anna piece.	
400	100	40	10	4	Pagoda
1,000	250	100	25	10	2½ 5 Rupees.

In the pie and 5 Rupee piece system the present coinage could be maintained intact, the anna would be declared of value ten pies and the eight anna piece of value 100 pies, and the rupee of value 200 pies.

There are some who urge that the Indian counts in four and this is very true, the Pisa of four pies being the great system of the cooly and in this system they are accustomed to count up to 5 Rupees. There are four fingers on each hand representing the four castes. The despised pariah, the thum, is separate and accordingly left out.

To assist their calculations it would be a good move on the part of Government to actually make a four pie or pisa piece and the calculations of the cooly would then be as in the above table.

THE MULTIPLICATION TABLES.

To turn now to the multiplication tables as their name implies they are a multiplication of trouble, they have to be learnt by heart, there is no connection the one with the other; they are the bugbear of the schoolboy and obsolete systems, as in dispensing medicines are still used in spite of new standard measures.

A pint of water is 20 ounces, of wine 16 oz. A stone in weighing a man is 14 lbs., in beef 8 lbs., in cheese 24 lbs. A firkin of butter 56 lbs., of raisins 112 lbs., and so on. For one hundredweight we have 112 lbs.; it is evident that the dealer of olden days required 12 lbs. extra as a gift when buying and so this error became incorporated.

The French system of weight is based on the gramme which is the weight of a cubic centimetre of water at the temperature of maximum density; it equals 15.412 English grains. It was adopted in France in 1799, it is not, however, necessary for us to slavishly follow the French but to adopt a simple system from our own measures and so keep in touch with our old records.

The English system is based on a pint of water which at 62° Fah. weighs a pound and a quarter and occupies a space of 34.65 cubic inches.

lb.		lb.	
100	Cwt.	10	Gallon.
1,000	10 Ton.	1 000	100 Ton.

It would be simple to co-ordinate measures of weight and capacity as in the above tables. At present the ton is 2,240 lbs., and at 1s. a Cwt. one knows the price of a ton is £1 but as we are proposing to abolish the shilling and substitute florins we should also reduce the cwt. to 100 lbs. as in America and the ton to 1,000 lbs. as the minders do. For the Indian to co-ordinate his weights with the English, there is a good deal of difficulty as these alterations are the effect of time rather than the effect of Parliamentary decrees as witness Apothecaries' weight abolished in 1864 still being used to dispense medicines, the standard Avoirdupois being used for buying medicines only.

Of the new coins one should be made to be exactly the 40th of a lb. the rupee or tola being left as it is. 400 would then equal a gallon, and 4,000 a cwt., this exactly suiting the Indian counting in fours.

MEASURES OF LENGTH.

In measures of length, as I have put before, the French measure is based on a decimal of the meridian line, this is a standard which is fixed and can never be altered.

The British base theirs on the yard, a part of which, the inch, is the length of three barley corns placed in a line, one would think the barley corns would vary according to soil and cultivation, this is however as it may be; we have anyhow the surveyors chain of 66 feet containing 100 links, the link should be made the unit of length, there are ten chains in a furlong and should be 100 chains in a mile instead of 80.

Links.			Hands.		
100	Chain.		100	Gunta Chain.	
1,000	10	Furlong.	1,000	10	Hectometre or $\frac{1}{2}$ Furlong.

With the link as the unit there is already a decimal system in the higher measures and the Indian has much the same. He uses a chain of 33 feet slightly longer than the French decometre of 32.8089 linear feet, and according to his system the gunta chain contains the breadth of one hundred hands measured below the fingers.

Most of the Indian counting is done by the hand, two clenched hands with outstretched thumbs represent a foot, pot tiles are made the length of the forearm with clenched hand and so on.

SQUARE MEASURE.

Links.			Hands.		
10,000	Sq. Chain.		10,000	Gunta.	
10	Acre.			100	(Kandiga of 2 $\frac{1}{2}$ acres.)
100	10	Sq. furlong.			

To complete the measure there should be ten furlongs in a mile and so one thousand acres instead of as at present 640 or the name mile could be altered to stade.

The Indian kundiga of 2 $\frac{1}{2}$ is roughly the same as the French hectare the hectare being 5 perches or $1\frac{1}{2}$ gunta smaller only.

The kundiga is an interesting measure and worked out to a nicety, it is one thousand hands each way, the amount of seed required for sowing is a heiro of 240 seers, the produce should be 240 bundles or coolie loads of paddy each bundle will make 4 sheaves of straw and contain 12 seers of paddy.

It is not necessary to dilate much on the great convenience a decimal system would be to the country. Ceylon already has 100 cents in the rupee. The keeping of accounts would be simplified by having only two columns for 5 Rupee pieces which might be called "Georges" and pies.

The 5 Rupee piece would be best for the majority in the country as the ideas of the coolie and cultivators do not soar much higher, and for the merchant and financier there would be a coin of anyhow a decent value different from the rupee and the third of a sovereign. Or there could be also a piece of value 50 for the financier.

In weights and measures a universal system is urgently called for, there is the railway maund, the sugar maund, the coffee maund, the jaggery maund, all of different weights with one name, also the seers of Madras, Coorg and Mysore are different, and when one is buying or selling one has to expressly ask or state how many lbs. or how many tolas there are in the maund or seer referred to, and all this entails time.

G. CREWE ORLEBAR.

RUBBER

The Employment of Sodium Bisulphite in the Preparation of Plantation Rubber.

One of the most important points of difference between South American rubber obtained from *Hevea brasiliensis* and plantation rubber obtained from the same tree is that while the first and best product in the former case is restricted to one grade or type viz., fine hard, first quality rubber in the latter case may be prepared in one of four types, viz:—

- (1) Smoked sheet or biscuit.
- (2) Smoked crepe.
- (3) Pale sheet or biscuit.
- (4) Pale crepe.

The first two types resemble fine hard, inasmuch as they are smoke-cured. The two latter have no exactly corresponding products in South American rubber. The preparation of pale crepe in particular is confined to the plantation rubber industry. For this type of rubber there has been a strong demand during the past few years, a demand which does not appear to decrease at the present time.

In the preparation of pale crepe rubber the latex is coagulated in volumes varying from a few gallons up to 500 or 600 gallons. In subsequent treatment the coagulum may be cut up and worked in the machines, either as soon as coagulation appears to be complete (from two to three hours) or after an interval of 16 or 18 hours (i.e., the following morning). The procedure varies according to the system of working adopted in the different estate factories.

In the earlier days of the plantation industry it was observed that the rubber allowed to coagulate over night darkened considerably on the surface; in fact this darkening of the surface appears to be a natural process. It usually begins after a very short interval, and becomes more marked as the interval is prolonged. It is obvious that, if a piece of coagulum thus affected by a dark surface be passed through a washing machine, the final length of thin rubber will be characterised by dark streaks on a paler ground. In other words, the product will not be uniform in appearance. We do not propose in this paper to discuss whether the presence of these dark streaks affects the uniformity of the product with regard to actual quality.

To avoid any confusion of issues, it may be pointed out that dark streaks resulting from the darkened or oxidised surface of the original coagulum are not to be confounded with streaks due to the inclusion of particles of foreign matter. As already pointed out, the dark streaks we are considering appear to be due to a natural process of oxidation, and may vary in intensity according to the character of latices from different areas, whether the tree is tapped near the base or higher up the trunk, and also the age of the trees.

Even if the coagulum is machined before it shows definite signs of surface oxidation, it generally happens that oxidation progresses in the finished crepe or sheet until the rubber is dry, and possibly to some smaller degree after the rubber is dry.

As it was observed that a pale uniform product commanded a higher market price than streaked rubber of the same grade, it was apparent that it would be of great benefit to the plantation industry if some method could be devised whereby surface darkening could be inhibited. Managers of estates were at pains to discover some such means. The object was achieved in some cases by extreme dilution of the latex accompanied by quick coagulation, for which it was necessary to use large excesses of acid coagu-

lant. In other instances a pale product was obtained by placing the freshly coagulated rubber in hot water for some little time. None of these measures were satisfactory and the proportion of pale rubber produced was small in comparison with the total output of first grade rubber, and what the rubber gained in appearance it lost in actual quality, sheets of rubber which had been immersed in hot water tended to stick together, and other difficulties arose.

In the course of investigation carried out in the laboratory of the Rubber Growers' Association in the Federated Malay States, it was found after numerous experiments that the desired end could be best attained by the employment of very small quantities of sodium bisulphite. A great number of experiments were made, and all samples were submitted to vulcanization tests in order that any possible effect upon the ultimate quality of the rubber might be detected. The results were so highly satisfactory that the use of sodium bisulphite was recommended in the bulletins issued by the chemists to all estates belonging to companies which were guarantors to the Malaya Research Fund. The almost immediate result was that it became possible for any estate to produce a very large proportion of its first grade rubber in the form of pale uniform crepe. At the same time the standard of average pale crepe was raised. The use of sodium bisulphite has since become common knowledge in the plantation rubber industry, and it would not be wide of mark to state that the vast majority of pale rubber now put upon the market has been prepared with the aid of that chemical.

The utility of using more than a minimum quantity has always been insisted upon, both with regard to the effect produced and the waste of money involved. It is only necessary to employ sodium bisulphite when the latex or the coagulum shows a tendency to darken rapidly. This tendency is more marked in some latices than in others, and it should be borne in mind that only the absolute minimum quantity necessary to counteract surface oxidation should be used. This quantity may be determined on any estate by simple experiment. In actual practice the quantity necessary has been found to vary from 1 part sodium bisulphite to 400 parts latex, to 1 part sodium bisulphite to 2,400 parts latex, or even less. The actual cost has been found to vary from 1-18d. to 1-72d. calculated per pound of dry rubber.

When it became known to buyers and manufacturers that sodium bisulphite was being employed in the preparation of pale rubbers, there was some amount of opposition raised, and in one or two quarters it was definitely asserted that a continuation of the process would be prejudicial to the best interests of the plantation rubber industry. It was asserted that the use of sodium bisulphite had a tendency to make the rubber brittle, and in a number of instances instructions were given from London to discontinue the employment of the chemical in estate practice. Although such prejudice has abated somewhat the assertion that the sodium bisulphite makes rubber brittle is still made by those in the trade whose opinions carry some amount of weight. At the same time the fact remains that rubber prepared by this particular process is bought eagerly and used largely.

We venture to refer here to the misuse of the word "bleached" in connection with rubber prepared with sodium bisulphite. The word "bleached" in common parlance means making white something which which is already of a dark colour, and sodium bisulphite is not used in this sense in the preparation of rubber. That is to say, the rubber is not allowed to darken and then bleached white again by the addition of sodium bisulphite. The probable action of the sodium bisulphite is that of an antiseptic in that it inhibits the fermentative changes which

naturally take place when latex is exposed to air. Fermentative changes, if allowed to proceed unchecked, would be accompanied by and produce a darkening of the rubber.

Without wishing to appear as apologists for the use of sodium bisulphite on estates, it may be pointed out that the consumers themselves are responsible for the supply of rubber prepared with this chemical, as they showed themselves willing to pay a premium for pale rubbers of uniform colour. Whatever may have been the means adopted for inhibiting surface oxidation previously, it should be remembered that some artifice was resorted to, and that a naturally pale, uniform rubber could not be regularly obtained without some such artificial aid. In advocating the use of sodium bisulphite we were convinced that we were offering a means which was simple, cheap, highly efficient and non-injurious. With regard to the statements made as to the harmful effects of the chemical upon the quality of the rubber produced, we are in a position to refute these by the results of continuous experimental work.

We have tested a great many specimens of rubbers prepared with sodium bisulphite, together with comparative samples similarly prepared, but without the use of sodium bisulphite. In the great majority of cases the difference between the figures obtained is very small, but on the whole the specimens prepared with sodium bisulphite are of a trifle better quality than those prepared without.

We give details of two pairs of samples taken at random from our testing book. The vulcanized rubbers are in one case twelve months old, and in the other six months, and the tests for tensile strength have been made within the last few days; any appreciable deterioration would have been apparent had such taken place.

TESTS MADE ON THE VULCANIZED SPECIMENS ONE WEEK AFTER CURING.

We give the actual experimental figures obtained with the Schwartz hysteresis machine on a strip 50 mm. long. Column I. is the extension limit produced by a given load (200 grms. per sq. in. cross sectional area), Column II. gives the increase in extension limit at the result of five consecutive applications of the load. Column III gives the sub permanent set.

Ref. No.	Preparation.	I.	II.	III.
2689	Sheet without Sodium Bisulphite ...	78'8	39'8	10'8
2690	" with " " ...	69'8	34'9	8'0
2941	Crepe without " " ...	80'8	42'5	8'9
2942	" with " " ...	76'9	38'2	7'9

TESTS MADE ON PORTIONS OF THE SAME VULCANISED SPECIMENS WHEN 12 MONTHS AND 6 MONTHS OLD RESPECTIVELY.

Column IV. gives the breaking strain. Column V. the elongation at moment of rupture, the original length being put to 1.

Ref. No.	Preparation.	IV.	V.
2689	Sheet without Sodium Bisulphite ...	2966	9'96' 12 months
2940	" with " " ...	3250	10'05' old.
2941	Crepe without " " ...	3156	10'60' 6 months
2942	" with " " ...	3439	10'80' old.

It is not necessary to discuss these figures in detail, except perhaps to point out that under Columns I., II., and III the lower the figure the better the sample, and under Columns IV. and V the higher the figure the better the sample. We merely wish to call attention to the comparative figures for the rubbers prepared with and without sodium bisulphite respectively. The difference in quality is always in favour of the sodium bisulphite prepared rubbers, and this also applies to a number of other comparative tests we

have made. In a recent series of three or four rubbers, where the proportion of sodium bisulphite was progressively increased, starting with a specimen containing none at all, the quality improved with increasing proportions of bisulphite. As the amount added is in all cases quite small not exceeding one part per 400 of latex, it is not easy to suggest a theory to account for the differences observed.

Rubbers prepared with sodium bisulphite tend to dry more slowly than those not so treated. The effect is quite marked where unnecessarily large proportions of bisulphite are used, but with the very small quantities required in the generality of cases the effect is slight, and does not amount to more than a couple of days over or above the two or three weeks usually required for drying. It is just possible that the improvement in quality may be connected with the longer period required for drying.

The amount of residual sulphate in the rubber resulting from the use of the sodium bisulphite is very minute. Rubbers prepared without the use of sodium bisulphite frequently contain traces of sulphate, so that, if a trace of sulphate is found, it is not necessarily attributable to sodium bisulphite. The actual amounts found are usually too small to estimate with accuracy, but are generally less than '01 per cent., reckoned as sodium sulphate, and do not exceed '05 percent. These figures are small even in contrast with the natural ash of carefully prepared rubbers which vary up to '5 per cent. or more.

In conclusion, we have shown how sodium bisulphite has been found to be a cheap and effective agent for preserving the even, pale colouring of rubber, without in any way damaging or having a deleterious effect on the rubber, but rather the reverse. We are indebted to the Committee of the Rubber Growers' Association Research Fund for permission to publish these results.—*The India-Rubber Journal*.

CORRESPONDENCE.

The Editor,

Planters' Chronicle.

Green Bug.

Sir,—Your various correspondents have given a good deal of valuable information on the treatment of Green Bug, and we in Mysore are duly grateful to them.

I now call upon the brethren in the Shevaroyis, who have hitherto been silent, to "come over to Macedonia and help us" by explaining if possible why this pest has done less damage there than elsewhere. Is this due to the existence of enemies of the Bug in larger quantities there elsewhere? Or to a vigorous spraying campaign *ab initio*? Or has the high cultivation which I believe Shevaroy Planters have mostly carried on helped their bushes to resist its depredations? Or is it due to natural advantages of any sort?

I have twice paid flying visits to Yercand, and found that those with whom I had the pleasure of discussing Coffee matters were strong advocates of high cultivation; but I also saw some neglected-looking coffee in small gardens which, if highly cultivated, were distinctly ungrateful. I do not know who these belonged to, but would be glad to learn if they suffered more than the cared-for gardens and if our friends generally found that their liberal treatment of their coffee led to there being room for all—bugs and berries too.

Yours faithfully,

C. DANVERS.